

CLAIMS:

1. An apparatus for forming a compacted powder slug coated with a film, comprising:

a platen having a pocket for receiving a vacuum formed film into the pocket and receiving a powder; and

a mechanical means comprising a compression piston for compacting the powder in said pocket, the compression piston having a front face with a concave recess and a square edge around the circumference of the front face.
2. An apparatus according to claim 1 wherein the pocket has a base formed by a lower piston, the lower piston having a front face with a concave recess and a square edge around the circumference of the front face.
3. An apparatus of claim 2 wherein the front face of the lower piston further comprises at least two apertures to allow a vacuum to be formed in the pocket for vacuum forming the film.
4. An apparatus of claim any one of the preceding claims wherein the platen further comprises an aperture to allow a vacuum to be formed between the platen and the film.

5. An apparatus of claim 4 wherein an array of apertures are formed in the platen around the circumference of the pocket.
6. An apparatus of any preceding claim wherein the platen further comprises a raised edge forming the circumference of the pocket.
7. An apparatus of any one of the preceding claims wherein the platen further comprises a recessed surface defining a raised edge forming the circumference of the pocket.
8. An apparatus of any one of the preceding claims wherein the diametric clearance between the compression piston and the pocket is a fraction of the film thickness.
9. An apparatus of any one of the preceding claims wherein the diametric clearance between the compression piston and the pocket is at most 35 micrometres.
10. An apparatus of claim 2 wherein the diametric clearance between the lower piston and the pocket is a fraction of the film thickness.
11. An apparatus of claim 10 wherein the diametric clearance between the lower piston and the pocket is at most 25 micrometres.

12. An apparatus of any one of the preceding claims wherein the platen further comprises an array of pockets.
13. An apparatus of any one of the preceding claims further comprises a means for pre-conditioning the film for temporarily retaining and heating, the means for pre-conditioning the film comprising a heated plate having a surface with an array of apertures for forming a vacuum between the heated plate and the film.
14. An apparatus of any preceding claim further comprising a gasket for receiving and retaining the compacted powder slug to transport and release the compacted powder slug to a desired location.
15. An apparatus as claimed in claim 14 wherein said gasket comprises an aperture with a receiving side for receiving the compacted powder slug and an exit side, the receiving side having a greater diameter than the exit side.
16. An apparatus for forming a compacted powder slug coated with a film, comprising:
a film preconditioner for temporarily retaining and heating the film, said film preconditioner comprising a heated plate having a surface with an array of apertures

for forming a vacuum between the heated plate and the film,

a platen having a pocket for receiving said preconditioned film into the pocket under vacuum, and receiving the powder; and

a mechanical means for compacting the powder in said pocket.

17. An apparatus for forming a compacted powder slug coated with a film comprising:

a platen comprising an array of pockets for receiving a vacuum formed film into the pockets, said pockets receiving the powder, the platen comprising at least one aperture proximate to said pockets to allow a vacuum to be formed between the platen and the film; and

a mechanical means for compacting the powder in said pocket.

18. An apparatus of claim 17 wherein an array of apertures are formed in the platen around the circumference of the pocket.

19. An apparatus for forming a compacted powder slug coated with a film comprising:

a platen comprising an array of pockets for receiving a vacuum formed film into the pockets receiving the powder, the platen having a recessed surface between a plurality of raised edge profiles each forming a circumference of a pocket;

a mechanical means for compacting the powder in said pocket; and a cutting sleeve moveable to interfere with said raised edge profile to cut a film supported thereon.

20. An apparatus of any one of the preceding claims further comprising a turntable for holding the platen and transferring the platen during processing.
21. An apparatus of claim 20 wherein the turntable comprises four platens.
22. An apparatus of any one of the preceding claims further comprising a vacuum for cleaning the platen.
23. An apparatus of any one of the preceding claims further comprising a dosator and a dosing unit for dosing the pocket with powder, the dosator comprising a powder hopper for holding the powder, and a dosing head having dosing tubes for retaining powder from the powder hopper and transferring the powder to the pocket.

24. An apparatus of claim 23 wherein the dosing tubes of the dosing head have tamping pins within the tubes for pre-compacting the powder in the dosing tubes and transferring the powder from the tubes into the pocket.
25. An apparatus of claim 23 further comprising a dosing unit having the mechanical means for compacting, and a dosing sledge for receiving the powder from the dosing tubes of the dosing head and dosing the pockets with the powder, the sledge moveable from a charging position to a dosing position.
26. An apparatus for forming a compacted powder slug encapsulated with a film comprising:

a platen having a pocket for receiving a first vacuum formed film into the pocket and receiving a powder;

a dosing means for placing the powder in a position suitable for compaction of the powder in the pocket having the first vacuum formed film with powder;

a compacting mechanical means for compacting the powder;

a turntable for holding the platen and rotatable to transfer the platen from one station to another station during processing, a station for applying the film into the pocket of the platen and compacting the powder to

partially enrobe the compacted powder, another station for applying a second vacuum formed film onto the partially enrobed compacted powder to completely coat the slug with film.

27. An apparatus as claimed in claim 26 wherein the dosing means places the powder proximate the pocket in a position suitable for compaction of the powder in the pocket having the first vacuum formed film with powder.
28. An apparatus as claimed in claims 26 or 27 wherein the dosing means doses the pockets having the first vacuum formed film with the powder.
29. An apparatus as claimed in claim 26 further comprising a vacuum for cleaning the platen forming another station for cleaning the platen.
30. An apparatus as claimed in any one of claim 26-29 wherein the number of platens in the turntable corresponds to the number of stations in the apparatus.
31. An apparatus as claimed in any one of claims 26-30 wherein the turntable comprises four platens for processing.
32. An apparatus as claimed in any of claims 26-31 wherein said apparatus during said compaction process comprises a

means for isolating the compaction pressure forces from the turntable assembly.

33. An apparatus for forming a compacted powder slug coated with a film, comprising:

a platen having a pocket for receiving a vacuum formed film into the pocket and receiving a powder;

a mechanical means for compressing the powder in the pocket; and

a gasket for receiving and retaining the compacted powder slug to transport and release the compacted powder slug to a desired location.

34. An apparatus as claimed in claim 32 wherein said gasket comprises an aperture having a receiving side for receiving the compacted powder slug and an exit side, the receiving side having a greater diameter than the exit side.

35. An apparatus as claimed in claims 32 or 33 wherein the gasket comprises an array of apertures for receiving more than one compacted powder slug.